# MAGNETIC RESONANCE SYSTEM WITH MULTIPLE INDEPENDENT TRACKING COILS


## ABSTRACT OF THE DISCLOSURE

A magnetic resonance system has been developed for actively tracking the three-dimensional positions of numerous coils provided on one or more medical devices. One particular example of a novel magnetic resonance system of the present invention is capable of simultaneously tracking the positions of up to 32 coils or more, which may be provided on the medical device(s). As an example, catheter devices having a large number of independent tracking coils have been constructed, in which each coil has a direct connection to one at least the same number of receivers in the magnetic resonance system. Accordingly, physicians can obtain real-time visualization of the positions of medical devices using a magnetic resonance system, with sufficient frame-rates to guide the manipulation of the medical devices within the body of a patient. The medical devices may include catheters and guidewires. The magnetic resonance tracking system can track multiple devices simultaneously, as long as the total number of tracking coils on the medical devices does not exceed the total number of receivers in the magnetic resonance system.